

OFFICIAL AMENDMENT

Application 09/925,059

August 25, 2005

Reply to Office Action of May 25, 2005

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AMENDMENTS TO THE DRAWINGS:

The first attached sheet of drawings includes changes to Fig. 2. This sheet, which includes Fig. 2, replaces the original sheet including Fig. 2. In Figure 2, a line connecting the display 148 to the controls and processing was omitted and has been added. The correction to the drawing is fully supported by the specification and the applicant believes that no new matter has been added.

Attachment: Replacement Sheet Annotated Sheet Showing Changes

The second attached sheet of drawings includes changes to Fig. 3A. This sheet, which includes Fig. 3A, replaces the original sheet including Fig. 3A. In Figure 3A, reference numbers 116 and 118 were inadvertently transposed. The correction to the drawing is fully supported by the specification and the applicant believes that no new matter has been added.

Attachment: Replacement Sheet Annotated Sheet Showing Changes

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REMARKS/ARGUMENTS

After the present Amendment, all previously pending claims have been canceled and new claims 44-51 have been added. Only claim 44 is in independent form.

The Specification and drawings are amended herein to address objections and other matters of form raised by the Examiner. The changes herein are presented for purposes of correcting minor errors and to provide clarity to the description and figures. No new matter is believed to be added.

In the previous office action made final, numerous claims were objected to or were rejected under various grounds including 35 U.S.C. § 112, 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a). The applicant has canceled all such claims thus rendering the above objections and rejections moot. As such, the applicant respectfully requests that the objections and rejections be withdrawn.

In the spirit of advancement of the present application, the applicant has canceled the prior pending claims and has presented new claims that include only a single independent claim, claim 44. The applicant has canceled the previous claims for purposes of advancement of prosecution of this particular application and expressly does not acquiesce or surrender the subject matter of those claims. The applicant reserves the right to pursue those claims or claims of similar scope in a continuing application.

New Claims

According to the M.P.E.P. §706.02, in order to be anticipating under §102, the reference must teach every aspect of the claimed invention. *Carella v. Starlight Archery and Pro Line Co.*, 804 F.2d 135, 138, 231 U.S.P.Q. 644, 646 (Fed. Cir. 1986). However, the art of record fails to teach or suggest an image fusing system comprising a beam combiner arranged to optically fuse a

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first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing as recited in claim 44.

U.S. Patent No. 6,781,127 (Wolff) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, Wolff discloses an electronic LIR and I2 sensor that provides electronic, but not optical fusion.

Further, with respect to claims Wolff uses one objective lens to correct aberrations for the whole waveband from 0.4 to 12 micron. Comparatively, claim 45 recites to add a first relay lens in a first optical path between a beam splitter and a first sensor for correcting aberrations in a first spectral band, e.g., of 0.4 to 1.1 micron, and a second relay lens in a second optical path between the beam splitter a said second sensor for correcting aberrations in a second spectral band, e.g., of 8 to 12 micron.

In addition, Wolff does not teach or suggest a common beam splitter as the common optical aperture and a first objective lens in a first optical path between a beam splitter and a first sensor for filtering radiation split from the beam splitter into at least a portion of the first spectral band and a second objective lens in a second optical path between the beam splitter and a second sensor for filtering radiation split from the beam splitter into at least a portion of the second spectral band as recited in claim 47.

U.S. Patent No. 6,379,009 (Ferguson) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, the system taught in Ferguson is a one eye (direct view) and one sensor optical overlapping system. Such structure is

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different from the claimed invention. For example, as claimed, a first optical output from a first sensor and a second optical output from a second sensor are optically fused into a third optical output for viewing. Comparatively, Ferguson uses an eye, which cannot reasonably be construed as a sensor having an optical output. Moreover, in Ferguson, the beam splitter only passes and reflects one spectral band, i.e., the visible light band. A second band, such as the infrared light band, is not passed. Accordingly, Ferguson utilizes only one lens and one sensor behind the beam splitter. Therefore, the beam splitter taught in Ferguson is not a beam splitter arranged to receive said target radiation passed through said common aperture and to split said target radiation into a first spectral band to a first sensor and a second spectral band to second sensor as claimed.

U.S. Patent No. 6,195,206 (Yona) again does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Yona discloses a night vision goggle for day and night use in the visible and near infrared region. However, there are no structures, e.g., a beam combining device, for performing optical sensor fusion system for both VIS/NIR and LIR images. Further, Yona does not teach or suggest a common optical aperture to obtain two images simultaneously. Instead, Yona teaches alternating the movement of mirrors 400 (see for example Fig. 17A), on a pixel by pixel basis, switching between receiving either image 651A or 651B. As such, the eye receives both images, but one after the other, in a time shared fashion. Therefore, Yona does not teach or suggest a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing.

U.S. Pat. No. 6,335,527 (Horn) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output

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from a second sensor into a third optical output for viewing. Moreover, Horn does not disclose a common aperture to receive the target radiation as claimed, nor does Horn teach or suggest a beam splitter arranged to receive said target radiation passed through said common aperture and to split said target radiation into a first spectral band and a second spectral band which is different from said first spectral band. Rather, Horn discloses a rifle sight to combine the visible and near infrared images together with GPS position data. Image combination is electronically performed using a CPU not an optical fusion system using a beam combining device as claimed.

U.S. Pat. No. 3,379,830 (Menke) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, Menke utilizes a concave mirror as an objective lens and a semi-permeable mirror to separate two wavebands. A sync pulse generator and a delay line are used to alternatively display two images on a screen. As such, the device disclosed by Menke is an electronic scanning system that cannot overlap two images together simultaneously and does not optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing.

U.S. Pat. No. 5,726,671 (Ansley) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing, where the first sensor and the second sensor are aligned along a common optical axis such that parallax between the first and second sensors is substantially eliminated. Rather, Ansley discloses a helmet mounted projection system that includes a set of off helmet elements including a background image generator and an area-of-interest (AOI) image generator. The outputs of the generators are combined and are scanned by a galvo scanner through a lens into a linear array (ribbon) of glass or plastic fibers. The scanner redirects light onto a projection screen, preferably a retro-reflecting screen, for viewing by an

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observer. As such, Ansley does not teach or suggest the use of first and second sensors aligned along a common optical axis such that parallax between the sensors is substantially eliminated. Moreover, Ansley does not teach or suggest optically fusing the output of two sensors aligned along a common optical axis.

U.S. Pat. No. 6,292,293 (Chipper) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, Chipper discloses a wide angle infrared lens and only used one detector, thus not disclosing an optical sensor fusion system.

U.S. Pat. No. 5,497,266 (Owen) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, Owen discloses a telescopic day and night sight using the direct visible image from the target for day time and the indirect near infrared image from an image intensifier for night time similar to Ferguson. However, the direct viewing image is not from a sensor. As such, Owen does not teach or suggest a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing.

U.S. Pat. No. 4,720,871 (Chambers) does not teach or suggest the use of a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing. Rather, Chambers discloses an image or signal processing system that is not a sensor fusion system. Thus, Chambers does not teach or suggest a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing.

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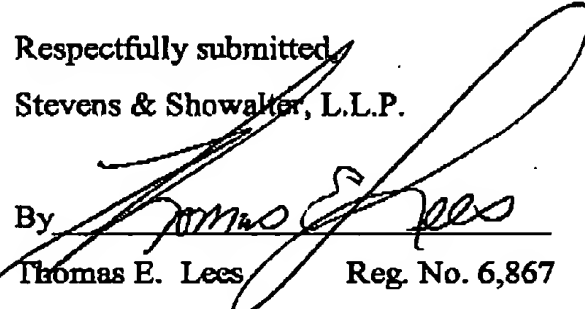
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The referenced patents from U.S. Pat. No. 6,781,127 (Gross), U.S. Pat. No. 4,488,414 (Jungkman), and U.S. Pat. No. 5,336,899 (Nettleton) do not have any relationship with sensor fusion and do not teach or suggest a beam combiner arranged to optically fuse a first optical output from a first sensor and a second optical output from a second sensor into a third optical output for viewing.

Conclusion

For all of the above reasons, the applicant respectfully submits that the above claims recite allowable subject matter. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response. Otherwise, early notification of allowable subject matter is respectfully solicited.

Respectfully submitted
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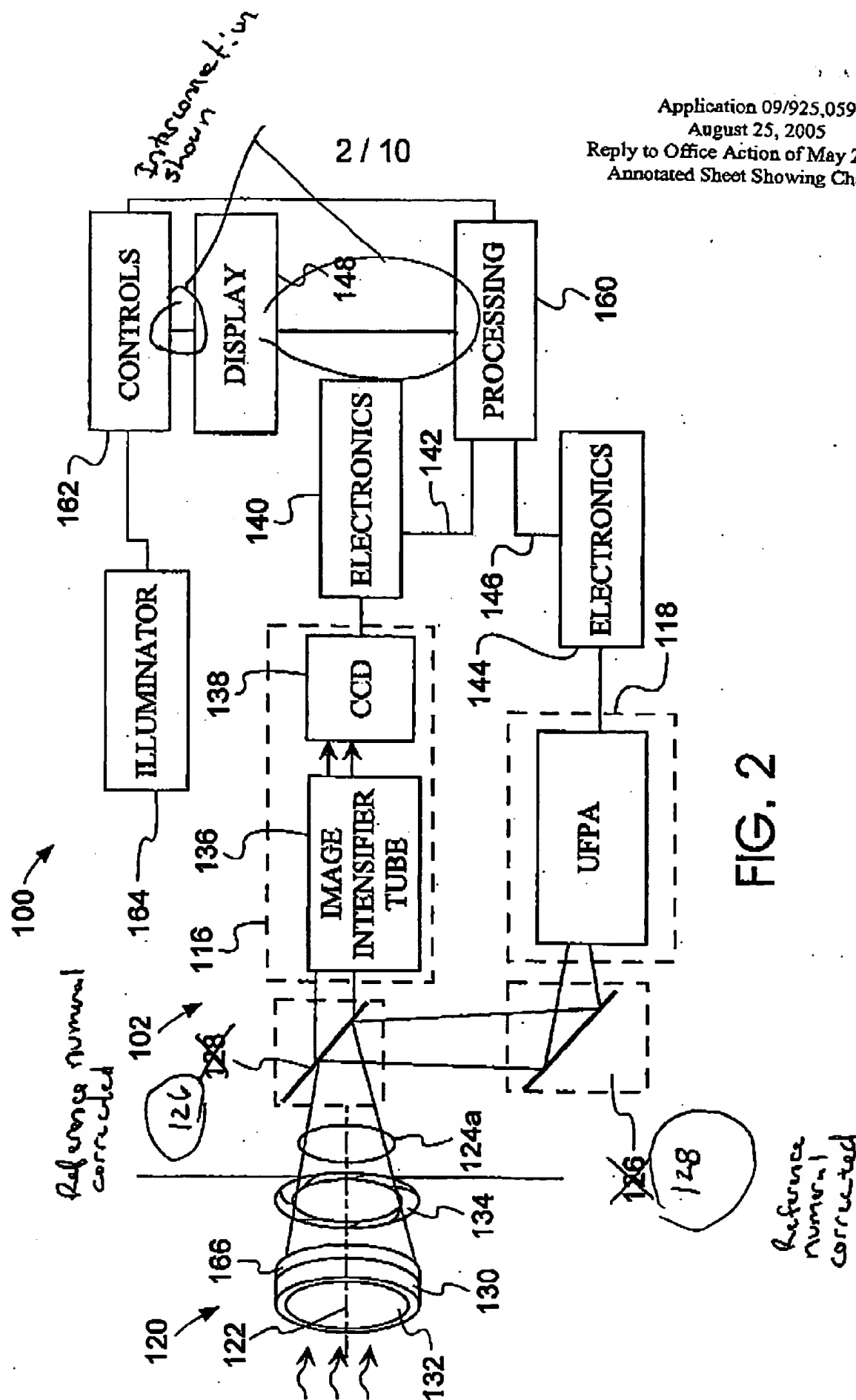


FIG. 2

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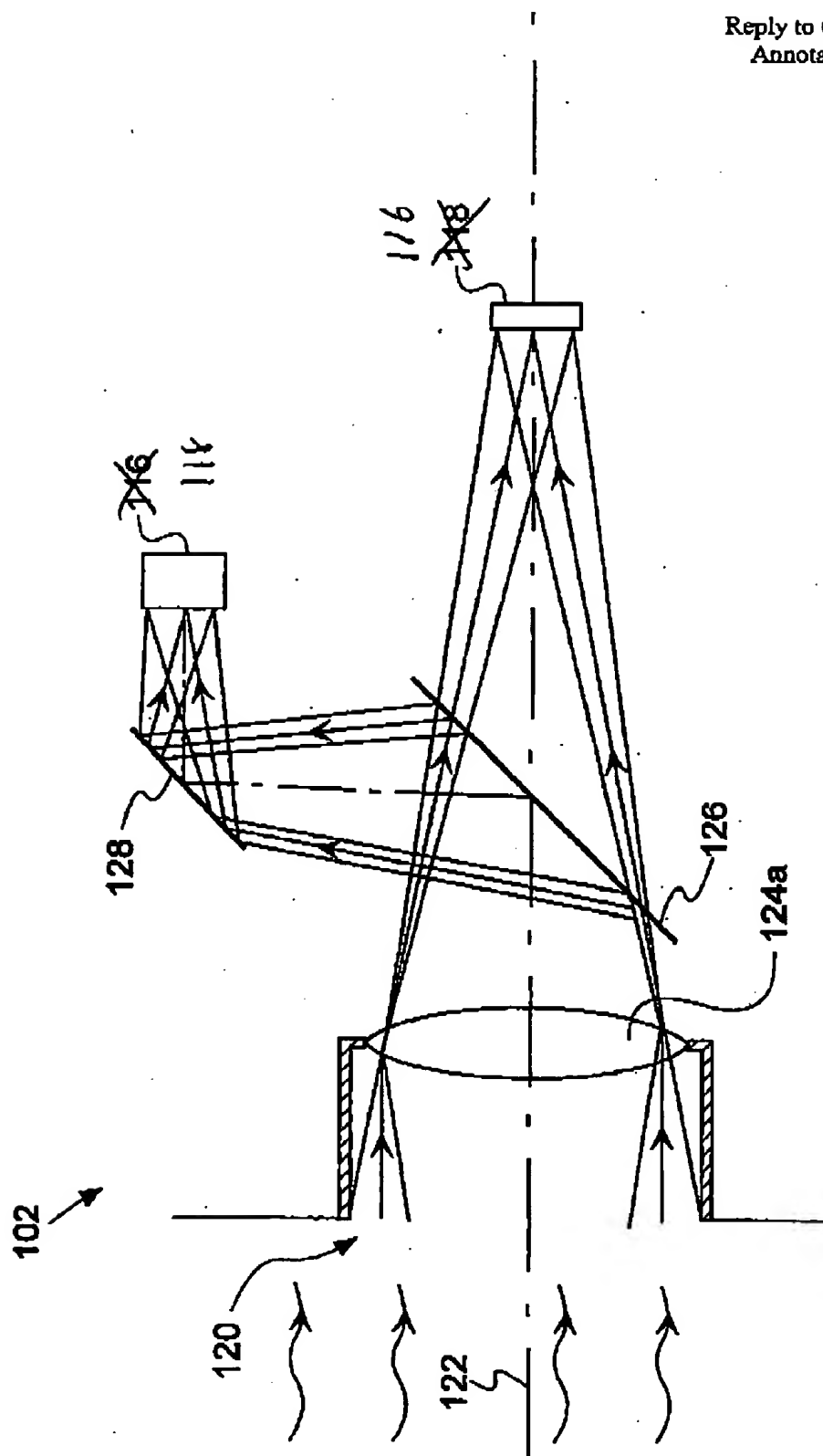


FIG. 3A